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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,013	05/31/2001	Albert Birner	GR 00 P 4121	8219

7590 08/05/2003

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EXAMINER
COLEMAN, WILLIAM D

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/871,013	BIRNER ET AL.	
	Examiner	Art Unit	
	W. David Coleman	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☒ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg et al., U.S. Patent 5,511,428 in view of Chu et al., U.S. Patent 6,217,724 B1.

4. Pertaining to claim 1 Goldberg discloses a semiconductor process substantially as claimed. See **FIGS. 1A-10E** where Goldberg teaches a method for electrically contacting a rear side of a semiconductor substrate when processing the semiconductor substrate, the method which comprises:

providing a semiconductor substrate 12 having a substrate rear side and a substrate front side disposed opposite from the substrate rear side;

removing an insulating layer disposed on the substrate rear side (column 21, lines 2-3, i.e., removing a native oxide) and;

having a electrically conductive contact layer **10** formed of a semiconductor material is disposed between the semiconductor substrate and the substrate holder. However, Goldberg fails to teach placing the semiconductor substrate with the substrate rear side in a substrate holder. Chu teaches placing the semiconductor substrate with the

substrate rear side in a substrate holder. See **FIGS. 1-8** where Chu teaches placing the semiconductor substrate with the substrate rear side in a substrate holder. In view of Chu, it would have been obvious to one of ordinary skill in the art to provide a substrate holder for a semiconductor substrate in the Goldberg semiconductor process because the system has a substrate holder disposed in the chamber to support a silicon substrate (see Abstract, second sentence).

5. Pertaining to claim 2, Goldberg discloses the method according to claim 1, which comprises providing the electrically conductive contact layer as a diffusion barrier against materials forming the substrate holder (column 14, lines 46-50, i.e., the silicon wafer is doped for electrical contact).

6. Pertaining to claim 3, Goldberg discloses the method according to claim 1, which comprises providing the electrically conductive layer as a doped layer wherein the electrically conductive contact layer and the semiconductor substrate are doped with a same type of charge carriers (column 14, lines 46-50).

7. Pertaining to claim 4, Goldberg teaches the method according to claim 1, which comprises forming a trench in the electrically conductive contact layer starting from a surface of the electrically conductive contact layer facing the semiconductor substrate.

8. Pertaining to claim 5, Goldberg discloses the method according to claim 1, which comprises forming a mesa in a surface of the electrically conductive contact layer facing the semiconductor substrate.

9. Pertaining to claim 6, Goldberg discloses the method according to claim 1, which comprises forming a hole **10** in the electrically conductive contact layer such that the hole extends from a surface of the electrically conductive contact layer facing the

semiconductor substrate to a further surface of the electrically conductive contact layer facing the substrate holder.

10. Pertaining to claim 7, Goldberg discloses the method according to claim 1, which comprises:

forming a first trench in the electrically conductive contact layer starting from a surface of the electrically conductive contact layer facing the semiconductor substrate; and

forming a second trench in the electrically conductive contact layer starting from the surface of the electrically conductive contact layer facing the substrate holder.

11. Pertaining to claim 8, Goldberg discloses the method according to claim 1, which comprises:

forming a first mesa in a surface of the electrically conductive contact layer facing the semiconductor substrate; and

forming a second mesa in a surface of the electrically conductive contact layer facing the substrate carrier.

12. Pertaining to claim 9, Goldberg discloses the method according to claim 4, which comprises generating a given pressure in the trench, the given pressure in the trench being lower than a pressure at the substrate front side.

13. Pertaining to claim 10, Goldberg discloses a method for electrically contacting a rear side of a semiconductor substrate when processing the semiconductor substrate, the method comprises:

providing a semiconductor substrate having a substrate rear side and a substrate front side disposed opposite from the substrate rear side; and

an electrically conductive contact layer formed of a semiconductor material is disposed between the semiconductor substrate and the substrate holder for electrically contacting the substrate rear side when processing the semiconductor substrate. However, Goldberg fails to teach placing the semiconductor substrate with the substrate rear side in a substrate holder. Chu teaches placing the semiconductor substrate with the substrate rear side in a substrate holder. See **FIGS. 1-8** where Chu teaches placing the semiconductor substrate with the substrate rear side in a substrate holder. In view of Chu, it would have been obvious to one of ordinary skill in the art to provide a substrate holder for a semiconductor substrate in the Goldberg semiconductor process because the system has a substrate holder disposed in the chamber to support a silicon substrate (see Abstract, second sentence).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004. The examiner can normally be reached on 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

W. David Coleman
Primary Examiner
Art Unit 2823

WDC
August 1, 2003